SSI

STRATEGIC SIMULATIONS INC

LIMITED WARRANTY

Strategic Simulations, Inc. ("SSI") warrants that the diskette on which the enclosed program is recorded will be free from defects in materials and workmanship for a period of 30 days from the date of purchase. If within 30 days of purchase the diskette proves defective in any way, you may return it to Strategic Simulations, Inc., 883 Stierlin Road, Building A-200, Mountain View, CA 94043-1983 and SSI will replace it free of charge. In addition, if the diskette proves defective at any time after the first 30 days, return the diskette to SSI and SSI will replace it for a charge of $10.00. Please allow about four weeks for delivery.

SSI MAKES NO WARRANTIES, EITHER EXPRESS OR IMPLIED, WITH RESPECT TO THE SOFTWARE PROGRAM RECORDED ON THE DISKETTE OR THE GAME DESCRIBED IN THIS RULE BOOK, THEIR QUALITY, PERFORMANCE, MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE. THE PROGRAM AND GAME ARE SOLD "AS IS." THE ENTIRE RISK AS TO THEIR QUALITY AND PERFORMANCE IS WITH THE BUYER. IN NO EVENT WILL SSI BE LIABLE FOR DIRECT, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY DEFECT IN THE PROGRAM OR GAME EVEN IF SSI HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. (SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF IMPLIED WARRANTIES OR LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.)

The enclosed software program and this Rule Book are copyrighted. All rights are reserved. This Rule Book may not be copied, photographed, reproduced, or translated or reduced to any electrical medium or machine-readable form, in whole or in part, without prior written consent from SSI. The program accompanying this Rule Book may be copied, by the original purchaser only, as necessary for use on the computer for which it was purchased.

© 1984 by Strategic Simulations, Inc.
All Rights Reserved.

TABLE OF CONTENTS

PAGE

1.0 INTRODUCTION 1
Description of Action • Talking to the Computer • Saving a Game
Game Scale and Map • Units • Starting the Game (Commodore 64)
Starting the Game (Atari) • Starting the Game (Apple) • Parts Inventory

2.0 SEQUENCE OF PLAY 1
Determining Conditions of Play • Historical Set-Up
Sequence of Play • Sequence of Play Exceptions

3.0 AIR PHASE 2
Air Point Schedule • Air Mission Menu • Interdiction
Ground Attack • Air Drops

4.0 SUPPLY PHASE 2
Supply Trace • Supply States • Supply Effects • Supply Exceptions

5.0 REINFORCEMENT PHASE 2
Entry Hexes • Delayed Arrival

6.0 UNIT ORGANIZATION PHASE 2
Cursor Menu • Unit Menu • Unit Organization Menu • Artillery Transfers
Replacements • Build-ups and Breakdowns • Bridges

7.0 OPERATION PHASES 3
Cursor Menu • Unit Menu • Command Menu • Operation Point Allowances
Moving a Unit • Zones of Control, Movement Restrictions and Stacking
Travel Mode and Road Movement • Fortifications
Plotting Combat and Advancing After Combat • Exiting German Unit

8.0 COMBAT 4
Efficiency • Combat Strength Modifiers and Bonuses • Casualties
Retreats and Advances

9.0 WEATHER 4

10.0 VICTORY CONDITIONS 5
Victory Points • End of Game and Victory Levels

11.0 HISTORICAL COMMENTARY 5

12.0 STRATEGY & TACTICS 6
German Player • American Player

13.0 CHARTS, TABLES, AND EXAMPLES OF PLAY 6
Unit Symbol Legend • Order of Battle Chart
Unit Statistics and Conditions Example • Artillery Corps Table
Operation Cost Table • Combat Modifiers • Supply Examples

14.0 DEDICATION 7

1.0 INTRODUCTION

On December 16, 1944 the Germans launched their final offensive in the West. Hitler planned to cross the Meuse River through the Ardennes Forest and reach Antwerp, isolating several Allied divisions. The result could have very well ended in negotiated peace favoring the Axis. This offensive became known as the Battle of the Bulge. BREAKTHROUGH IN THE ARDENNES™ is a regimental level simulation of Germany's last effort on the Western Front.

1.1 Description of Action

Each game turn represents a full day of operations. These operations include supply, air strikes, allocating corps artillery, building-up and breaking-down regiments and divisions, constructing and destroying bridges, fortifying, changing modes, moving units, and allocating and resolving combat.

1.2 Talking to the Computer

To enter a response to the computer that consists of numbers (such as the number of artillery points) type in the number into the computer and press the <RETURN> key. To select a routine from a menu or answer a Yes/No question just press the desired key.

1.3 Saving a Game

At the end of the Reinforcement Phase and every phase thereafter the computer will allow the player(s) to save the game in progress. You will need a scratch disk to store the saved game data. Save game disks for the Apple® must be initialized for SSI use during a game by following instructions included in the game program. Atari® and Commodore 64™ users may use any disk that has been properly formatted for use on their computer. Once a game is saved you will be able to restart it at the point where you left off.

1.4 Game Scale and Map

The game begins December 16, 1944 and ends December 27, 1944 for a total of twelve turns. Units in the game range from battalions to divisions.

The map includes parts of France, Belgium, Luxembourg, and Germany superimposed on a 32 by 31 hexagon grid. Each hexagon contains a specific terrain type (clear, rough, forest, and town) and represents an area of about two miles. Hexagons with a small white dot in the middle show German ownership. American ownership is shown by a hexagon with no white dot. Ownership changes when a unit moves into an enemy hexagon (very important for supply). Rivers are represented by blue hexsides. Hexagons connected by a road have white hexsides in common (brown on C-64).

The lower portion of the battle south of the Clerf and east of the Alzette Rivers is not depicted in the game. Units of both sides that fought in that general area are not included. As a result of this deletion and also to allow ample room for American reinforcements to deploy on the southern edge, German units are not allowed to enter the zero hexrow of the X coordinate. Also, not depicted on the map is the portion of the battlefield west of Rochefort (the tip of the bulge). This area is represented in the game by allowing units to exit the northern portion of the west map edge.

The map is oriented to the German view of the battle which means that the top of the screen is west, the right is north, the left is south and the east is at the bottom. German units start at the bottom of the screen and fight their way to the top of the screen. If you have a difficult time envisioning this please refer to the map provided.

1.5 Units

The various units depicted in the game are represented, graphically, by standard military symbols for type and size (see Unit Symbol Legend at back of rules book). Units are given a number of characteristics: unit and parent unit designations, combat strength, efficiency, fortification level, supply status, mode, artillery support content, stacking value, and remaining operation points. Units are either mobile or non-mobile (see Order of Battle Chart). Mobile units are those such as tank or mechanized infantry that have transportation organic or inherent to the unit. Non-mobile units have little or no such transportation and must rely on truck pools or travel by foot.

The standard unit of the game is the regiment/combat command. These regiments may build-up into divisional units which in turn may break-down into component regiments. Various armored support battalions and independent brigades have also been included. Abbreviations used in unit designations are listed below:

PZ = Panzer
PZGR = Panzergrenadier
RCN = Reconnaissance
ENG = Engineer
VG = Volksgrenadier
FJ = Fallschirmjager
ARM = Armored
CAV = Cavalry
INF = Infantry
AB = Airborne
DIV = Division
REG = Regiment
BRIG = Brigade
BATT = Battalion
TD = Tank Destroyer
FB = Fuehrer Begleit
G = Glider

1.6 Starting the Game (Commodore 64)

To begin the game, insert the game disk and type LOAD "*",8 and press <RETURN>, When READY appears type RUN and press <RETURN>.

1.7 Starting the Game (Atari)

Remove all cartridges from your computer. To begin the game, boot up the Scenario side of the disk (800XL owners will have to hold down the OPTION key when they turn on their computer to boot the game). After selecting the starting values for your game, you will be told to insert the Game Side of your disk.

1.8 Starting the Game (Apple)

To begin the game, boot your game disk and the game will start automatically. If you are using an Apple II with Pascal you must first use your BASICS disk. If you are using an Apple III you must first go into Apple II emulation mode. If you are using the Apple IIe keep the CAPS LOCK key pressed down throughout the game.

1.9 Parts Inventory

Your game should contain the following parts:

a. Game box
b. Rule book
c. One 5¼" game disk
d. Two map cards

2.0 SEQUENCE OF PLAY

BREAKTHROUGH IN THE ARDENNES is a two-sided game: German vs. American. The German forces must be commanded by the human player. The American forces may be commanded by either a human or the computer.

2.1 Determining Conditions of Play

At the start of the game the player(s) must determine the conditions under which the game will be played from the menu below:

1. NEW GAME SAVED GAME
2. LEVEL OF PLAY 1 2 3 4
3. HISTORICAL NON-HISTORICAL
4. SOLITAIRE TWO PLAYER
5. COLOR BLACK/WHITE (ATARI)
6. Scenarios
   - First Seven Days (16th–22nd)
   - Last Seven Days (21st–27th)
   - Twleve Days (16th–27th)

If you choose a saved game all options will be pre-determined by that saved game.

The level of play represents handicaps given to the German forces. Level four is the easiest level and level one is the hardest. Level three is the historical level. At level four the German player is given one more air point when due air points, double the normal replacement rate, and 50% more artillery points. At level three no modifications are made to either side. At level two the American player receives 25% more artillery points, double the amount of replacements, and two additional air points. At level one the American receives 50% more artillery points, triple the amount of replacements, and four additional air points.

The historical/non-historical option allows the player(s) to experience the special command control problem the Americans had that prevented them from blocking the advance of the 116th and 2nd Panzer divisions to Houffalize and across the Ourthe River early in the battle. Hexrows 11 through 17 may be entered only by selected American units (see Order of Battle).

The color option (Atari only) gives the German player blue units and the black/white option gives him white units.

Three scenarios have been provided to allow players to experience the first or second half of the battle as well as the full twelve days. Except for the Last Seven Days scenario the game begins with the Supply Phase at the beginning of the turn.

2.2 Historical Set-Up

At the start of the game the computer will assign all combat forces to their locations, depending on the scenario, when the Germans launched their offensive.

2.3 Sequence of Play

1. Air Phase
2. Supply Phase
3. Reinforcement Phase
4. Unit Organization Phase
5. American 1st Operation Phase
6. American 1st Combat Phase
7. German 1st Operation Phase
8. German 1st Combat Phase
9. American 2nd Operation Phase
10. American 2nd Combat Phase
11. German 2nd Operation Phase
12. German 2nd Combat Phase

2.4 Sequence of Play Exceptions

The first turn (December 16) the Americans have no Unit Organization Phase. Only a few American units are given operation points. *The Germans on December 16th (the first turn) may not move during the 1st phase (they may perfrom any other action including allocating combat).* Some German units are given zero operation points and some receive decreased operation point allowances. On December 17th (turn two) some American units have their operation points reduced.

The Americans are automatically supplied on December 16th and 17th (turns one and two). The Germans are supplied through December 18th (turn three).

3.0 AIR PHASE

During this phase, players will allocate and execute ground attack and interdiction air missions.

3.1 Air Point Schedule

The American player receives air points according to the weather:

Clear = six points
Fog = two points
Overcast = zero points

The German player receives two air points on December 18th (turn three) and receives one air point every turn with Fog weather.

3.2 Air Mission Menu

If either or both players receive air points a menu will appear with the following commands available:

(0-6): 0, centers the screen. 1-6, moves the cursor in the indicated direction.

(Q)uit: Exits the menu.

(I)nterdiction: Adds an air point to interdiction of enemy movement.

(G)round Attack: Executes an attack on the hex beneath the cursor.

3.3 Interdiction

Every air point allocated to interdiction acts to reduce operation points received by enemy units. The more points allocated the greater the effect. Enemy units are randomly affected.

3.4 Ground Attack

Every enemy unit in the hex under attack has a 50% chance of being disrupted. In addition, units in travel mode have a 33% chance of being strafed. Disrupted units lose half of their efficiency. Strafed units lose 30% of their combat strength and are changed to normal mode.

3.5 Air Drops

Air points not used in the Air Phase may be used for air drops in the Unit Organization Phase. An air drop in a hex brings all units up one supply level (isolated to unsupplied and unsupplied to supplied).

4.0 SUPPLY PHASE

Units may be in three supply states: supplied, unsupplied, or isolated. Units must have a supply line to a road that exits off a friendly map edge. See 13.7 for examples of supply.

4.1 Supply Trace

To be in supply a unit must be able to trace a line of supply no more than two hexes, unblocked by enemy hexes, to a supplied road. A supplied road is one that can trace a line of road hexes off a friendly map edge, unblocked by enemy hexes. American friendly map edges are the north, south and west edges. The Germans have only the east map edge. An enemy hex is one that either contains an enemy unit or one that was last entered by an enemy unit. Players do not need to concern themselves with the actual trace. The computer does it for all units. Note that enemy zones of control (hexes next to enemy units) do not block the supply trace.

4.2 Supply States

A unit is supplied if its supply trace is successful. A unit is unsupplied if not successful. A unit is isolated if it is unsupplied, surrounded by enemy zones of control or units (zones of control must be exerted by adjacent enemy units to be effective), and not under the command control of a division. A unit is under the command control of a division by being itself a divisional unit, or by being on or adjacent to a hex containing a divisional unit.

4.3 Supply Effects

Unsupplied units have their operation points halved. They not only fail to recover efficiency, but also suffer an additional efficiency loss. They have their modified combat strength cut by 25% when defending and 50% when attacking and may not transfer artillery in or out. Bridge blowing or building and fortifying may not be performed by unsupplied units. Isolated and unsupplied units may not change to travel mode. In addition such units are automatically changed to normal mode if in travel mode when their status changes in the Supply Phase unless their status changes due to the random fuel effect.

Isolated units suffer the same penalties as unsupplied units with some differences. Their modified combat strength is cut by 50% when defending, they receive zero operation points, and there is a 40% chance that they will surrender when attacked. As implied, isolated units may not attack.

4.4 Supply Exceptions

American units are automatically considered in supply on December 16th and 17th (the first two game turns). German units are in supply through December 18th (turn three).

Starting on Decmeber 20th (turn five), there is a 12% chance that any given mobile German unit will run out of fuel. Such units are given an unsupplied status irrespective of the supply trace.

5.0 REINFORCEMENT PHASE

The computer will automatically enter reinforcements on the map edges according to the Order of Battle Chart located at the back of the rules book.

5.1 Entry Hexes

If the entry hex of a reinforcement unit is enemy occupied or its entry would violate stacking, the unit will enter a nearby map edge road hex. Entry hexes are listed on the Order of Battle Chart for reinforcing units.

5.2 Delayed Arrival

Each side is allowed only so many units on the map at one time. The American may have fifty-seven and the German seventy. If a reinforcing unit would violate this limit then the unit's arrival is delayed that turn. The player would have to build-up units or, through combat, lose a unit in order for the reinforcing unit to appear the next turn. For every 50 combat points exited off the map by the German player the American player has the very next reinforcing unit on the north or west map edge permanently delayed.

6.0 UNIT ORGANIZATION PHASE

During this phase players may perform several operations including artillery transfer, unit build-up and breakdown, bridge blowing and building, inputing replacements, and exiting units from the map.

6.1 Cursor Menu

While in this menu a player may choose the following functions:

(0-6): 0, centers the screen and 1-6, moves the cursor in the indicated direction.

(G)et: Accesses the unit(s) in the hex beneath the cursor.

(Q)uit: Exits the current player's Unit Organization Phase.

(D)isplay: Pressing this key will change the time its takes for the computer to clear the screen after certain displays. The number in parentheses is the current display time. The higher the number, the longer the displays will stay on the screen. Pressing the key will change the number by one. When ten is reached, the next number accessed is zero.

(T)errain: Removes all unit shapes from the map to expose the terrain underneath. Press any key to return units.

6.2 Unit Menu

When the (G)et function is used from the cursor menu and there is more than one unit in the hex, a list of the units is displayed, numbered from one to two or three. Pressing a number will access that unit while pressing (Q)uit will return to the cursor menu.

6.3 Unit Organization Menu

An accessed unit will have its statistics and conditions displayed (see example at end of rules book for explanation of display). At the

bottom of the display is a list of actions or functions that may be performed:

(A)rtillery: Artillery transfers.

(M)ax. Artillery: Gives the unit maximum artillery allowed.

(R)eplacements: Replacement allocation. Numbers indicate available replacement points.

(B)uild-up/Breakdowns: Allows building-up and breaking-down of regiments and divisions.

(P)ools: Displays artillery points available in the corps for transfer.

(D)estroying Bridges: Activates bridge blowing.

(C)onstructing Bridges: Activiates bridge building.

(Q)uit: Returns to cursor menu.

(G)et: Accesses units in hex.

(S)upply, Air drop: Drops supplies (see 3.5, Air Drops).

6.4 Artillery Transfers

All units that belong to a division may transfer to or from their corresponding Artillery Corps Pool (see Artillery Corps Pool Table). Only units that belong to a division may contain artillery. Isolated units may not transfer artillery. At the beginning of the turn all artillery points contained by units are transfered back into the Artillery Corps Pools.

American units may contain up to 30 artillery points per stacking point. German units may contain up to 33 points for the first three turns and 15 points thereafter. A unit automatically returns half of its artillery to the pool for every hex moved into (except retreats). Artillery points may be permanently lost due to combat.

Artillery Corps Pools may receive additional points as reinforcements (see Artillery Corps Pool Table). German pools actually lose points early in the game to reflect the immobility of their artillery.

6.5 Replacements

Starting December 19th (turn four) both players may input replacements into infantry and armored formations. Independent units and battalion formations may not receive replacements. Units must be supplied to receive replacements. The American may input 15 infantry points and 10 armored points per turn. The German may input 10 infantry and 15 armored points. Replacements may not be accumulated from turn to turn. Replacements available are displayed on the Unit Organization Menu.

6.6 Build-ups and Breakdowns

Two or three regiments of the same division may build-up into a divisional unit. A regiment may also build into its already present divisional unit. Units must be in the same hex to build-up into the parent divisional unit. A divisional unit may break-down into its component regiments. Unit strengths, efficiencies, and fort levels are added together or averaged as appropriate in the build-up and breakdown process. A unit(s) assumes the supply status of the unit issuing the command. Built-up or broken-down units assume a normal mode.

Break-down will not be permitted if the unit limit of the player would be exceeded. The remaining number of available unit slots is displayed in parentheses, following the Build-up/Breakdown command. A divisional unit will have a stacking value equal to the number of units built into it. Some divisions contain four regiments. Only three of those may build-up into the divisional unit since only three stacking points are allowed in a hex.

Divisional units may not change into travel mode. They receive a 25% combat strength bonus.

6.7 Bridges

Bridges may be blown and rebuilt at bridge sites (see map) by adjacent units for an operation point cost (see Operation Costs Table). Only engineer units may build bridges for the Germans. Any American unit may conduct bridge operations. Isolated units or units in travel mode may not perform bridge operations.

A unit may only make a bridge blowing attempt once a turn. Engineer units have 50% chance of being successful and all others have a 35% chance. Bridge building is automatic. Units cannot build bridges when next to an enemy unit.

Mobile units except for engineers and panzergrenadiers may cross a river only through a bridge when in travel mode. The first German unit across a bridge (that current turn) incurs no additional operation point cost. Each German unit thereafter has two more operation point cost (+2) to cross that bridge than the previous unit.

7.0 OPERATION PHASES

During these phases players expend operation points performing actions that include: moving, changing mode, plotting combat and advances, and fortifying.

7.1 Cursor Menu

While in this menu a player may choose the following functions:

(Ø-6): 0, centers the screen and 1-6, moves the cursor in the indicated direction.

(G)et: Accesses the unit(s) in the hex beneath the cursor.

(C)ombat: Exits the Operations Phase and activates combat resolution.

(T)errain: Removes all unit shapes from the map to expose the terrain underneath. Press any key to return units.

7.2 Unit Menu

When the (G)et function is used from the cursor menu and there is more than one unit in the hex, a list of the units is displayed, numbered from one to two or three. Pressing a number will access that unit while pressing (Q)uit will return to the cursor menu.

7.3 Command Menu

An accessed unit will have a number of available commands displayed with some unit statistics below the actual game map. Below are listed the commands from which the unit may choose:

(A)dvance: Orders unit to advance after combat. An "Y" after this command signifies that the unit will advance while an "N" signifies that it will not.

(Ø-6): Centers and moves unit under the cursor.

(F)ort: Fortify one level. The number following is the current fort level.

(M)ode: Changes mode. Letter indicates present mode (T = Travel and N = Normal)

(D)isplay: Displays unit conditions and statistics.

(G)et: Accesses units in the hex.

(Q)uit: Returns to cursor menu.

(T)errain: Removes units from the map.

(E)xit: Exits German unit from eligible map edge.

7.4 Operation Point Allowances

Units of both sides receive operation points at the beginning of the turn and then again at the beginning of the second operation phase. The number of operation points received is dependent upon a unit's base allowance, air interdiction, mode, and supply state. The following are base allowances of the various unit types (#/#, first number is operation points received at beginning of turn and second is number received the second operations phase):

German	
PZ divisions and regiments	— 24/10
PZ brigades and PZGR units	— 20/10
Piper's PZ regiment	— 32/10
RCN (reconnaissance) units	— 28/10
ENG	— 20/10
VG, FJ, and ENG	— 12/6
American	
Armored units	— 18/20
Cavalry units	— 20/20
Infantry, Airborne, and ENG	— 9/9

In addition to the second phase's base allowance a unit will accumulate a portion of the beginning allowance, unused in the first phase. American mobile units may have a maximum of 24 and German mobile 20 operation points for the second phase and non-mobile units 12 points. Non-mobile American units receive double their regular allowance if in travel mode. Operation point allowances are cut in half for unsupplied units and reduced to zero for isolated units. There is no second phase allowance on December 16th (the first turn of the game).

7.5 Moving a Unit

To move a unit simply press 1-6, corresponding to the direction you wish to move (as indicated by the compass on the display). The operation point cost of the hex moved into will be subtracted from the unit's remaining operation points (see Operation Costs Table for complete list of costs).

If a unit has insufficient operation points to move into a hex it will not move unless the unit hasn't yet moved that turn and the hex being moved into is not adjacent to an enemy unit. The unit is then moved and its operation points is reduced to zero.

7.6 Zones of Control, Movement Restrictions and Stacking

The six hexagons surrounding a unit constitutes its zone of control (ZOC). Units must

pay an additional operation point cost to enter or leave an enemy ZOC. Units moving in normal mode directly from one enemy ZOC to another have their operation points reduced to zero. Fortifying costs more when in an enemy ZOC. To be isolated unsupplied units must be surrounded by enemy ZOC (of enemy units adjacent to them). Bridge building may not be conducted in enemy ZOC. Units that must retreat into an enemy ZOC lose extra casualties. The 150th German Panzer Brigade does not pay ZOC costs through December 17th (turn two). This unit had a special infiltrating mission and was composed mainly of captured American equipment.

German units may not move into the zero hexrow of the X coordinate of the map (the leftmost vertical hexrow). This rule exists to limit unrealistic German control of the southern hexrow and allows ample room for reinforcing American units. American units, except for those indicated on the Order of Battle Chart, may not enter X coordinate hexrows eleven through seventeen inclusive through December 22nd (turn seven). This restriction is in effect only if the Historical option is used when first setting up the game. This restriction reflects the command control and communications problems the Americans experienced between the northern and southern portions of the battlefield that allowed German Panzer formations to reach Houffalize and cross the Ourthe River relatively early.

Units may not use road movement costs unless in travel mode (see 7.2, Travel Mode). Mobile units except for engineers and panzergrenadiers may only cross a river in travel mode at a bridge. Engineer units reduce operation point costs for units crossing rivers in normal mode if the engineer unit occupies either hex of the river crossing.

Each non-divisional unit has a stacking value of one. A divisional unit has a stacking value equal to the number of units built into it. No more than three stacking points may be in a hex at any one time. Units in travel mode pay one more operation point to stack with friendly units in normal mode. Units in travel mode may not stack together (except entering reinforcements).

7.7 Travel Mode and Road Movement

A unit may change from normal to travel mode or from travel to normal mode at the cost of operation points (see Operation Costs Table). An unsupplied or isolated unit may not change to travel mode. American non-mobile units have their remaining operation points doubled when they enter travel mode. Units in travel mode change automatically to normal mode when strafed. Travel mode units have their modified combat strength reduced by 40%.

Units may only use road movement costs when in travel mode. Units in travel mode may only move into a hex that has a white hexside in common with its current hex. That white hexside represents a road connecting the two hexes (brown on the C-64). Travel mode units expend an additional point to stack. Travel mode units may not stack with each other except when first placed as reinforcements.

7.8 Fortifications

A unit may fortify to five levels by expending the operation point cost (see Operation Cost Table). Fortification costs more when the unit is next to an enemy unit. Fortification costs less when an engineer unit in normal mode is present. When a unit moves its fortification level returns to zero. A unit's modified combat strength when defending is increased by 30% per level of fortification. A unit's chances of retreating are also decreased when fortified.

7.9 Plotting Combat and Advancing After Combat

Both the defender and attacker expend operation points in combat. If a unit attacks in the second operations phase all remaining operation points are used. A unit that attempts to move onto an enemy unit will plot combat against that hex, provided the unit has sufficient operation points. The direction that the unit attacked will now be displayed whenever the unit is accessed. Combat plots may not be rescinded.

A unit may designate itself to advance after combat. It will advance if eligible.

7.10 Exiting German Unit

The German player may exit units off the map from specific hexes (see map) on the west and north map edges. Such units may never reenter the game.

Exited German units gain victory points every turn. These points are not added to the score until the end of the game, provided that the hex exited from is still in German supply. For every 50 combat points of units exited the American player has his very next reinforcing unit on the north or west map edge permanently delayed from entering the game.

8.0 COMBAT

When the Combat Phase is initiated each combat plotted by the player is resolved in order of the actual plotting. The combat strengths for both sides are added up and modified by various factors to determine the battle odds. Losses are then determined and distributed among the participating units. Retreats and advances are executed by the computer for eligible units. Odds, losses, and retreat results are displayed on the screen. In addition, the approximate, unmodified combat strength and hex location of the defender are also displayed.

8.1 Efficiency

Each unit has an efficiency that ranges from 40% to 100%. A unit's combat strength is directly modified by its efficiency (a combat strength of 50 with 90% efficiency would have a modified strength of 45). Efficiency represents fatigue and disruption incurred by a unit from movement and combat. A unit loses efficiency for every hex it moves into (except when in travel mode). A unit loses efficiency in battle according to its losses. Attacking units will lose more efficiency than defending units on a per loss basis. Isolated and unsupplied units lose efficiency at the beginning of each turn.

Units in supply regain some efficiency at the beginning of each turn. Any unused operation points from the previous movement phase recover efficiency on a point for point basis at the beginning of the turn.

8.2 Combat Strength Modifiers and Bonuses

The terrain of the defender will modify his strength according to the Combat Modifiers Table. The attacker will be cut by 25% if attacking across a river hexside. A unit's fortification level will increase its strength when defending by 30% per level. Unsupplied units have their attack strengths cut by 50% and their defense cut by 25%. Isolated units may not attack and are cut by 50% when defending.

After the above modifiers are applied to the unit any divisional bonuses are then applied. Artillery points for the attacker and defender are then added to the strength totals. Artillery points for the attacker are halved against towns and reduced by 10% per fort level. A unit may not be modified by more than triple its combat strength, excluding divisional bonus and artillery.

8.3 Casualties

The attacker's losses are based on its unmodified combat strength, a random, and a constant. The defender's losses are based on the attacker's losses, the odds, and a random. In addition losses are incurred by artillery. The defender loses one strength point per twenty enemy artillery points and the attacker loses one strength point per ten enemy artillery points. Losses are distributed to units proportionately based on combat strength.

8.4 Retreats and Advances

Retreats are based on the percent of casualties lost, unit efficiencies, fortification levels, and a random. Units in towns and units without retreat routes will not retreat, but will incur an additional strength loss. Units retreating into an enemy ZOC will incur additional casualties.

The computer will automatically retreat and advance units. Generally, units will retreat toward friendly lines away from the attacking force. The first unit to plot the attack will advance first if eligible. Units will not advance or retreat where normally prohibited in regular movement. Units expend operation points when retreating or advancing (except ZOC costs). A unit will advance or retreat even if it has insufficient operation points.

9.0 WEATHER

Weather affects the number of air points that each side receives. A ground freeze starting December 24th (turn nine) and lasting until the end of the game is independent of the weather (see Operation Cost Table). Below is a chart that shows the chances of the various types of weather occurring by turns:

December 16th and 17th — 100% Overcast

December 18th through 21st — 50% Overcast and 50% Fog

December 22nd through 24th — 16% Overcast, 34% Fog, and 50% Clear

December 25th through 27th — 34% Fog and 66% Clear

10.0 VICTORY CONDITIONS

The German gains victory points for taking towns, exiting units, eliminating American units, having a lesser percent of its combat strength eliminated, and controlling road hexes north of St. Hubert and west of the Ourthe River. The German player loses points for eliminated German units and having a greater percent of its combat strength eliminated than the American. The total points are used to determine the level of victory.

10.1 Victory Points

At the end of the game the German receives 25 points per town that he controls (50 points for Bastogne). He also will receive 25 points per turn for holding the towns below (the German receives 50 points per turn for Bastogne 7,13):

	LOCATION		LOCATION
Rochefort	14,2	Hotten	18,7
Marche	17,4	Ouffet	26,7
Elsenborn	27,25	Durbuy	22,7
St. Vith	19,23	Aywaille	8,13
Malmedy	26,21	Spa	28,16
Stavelot	24,19	Stoumont	25,16
Trois Ponts	23,17	Havelange	24,1
Manhay	20,13	Huy	30,3
Werbomont	23,12		

German units that exit the eligible west or north map edges (see map) receive points based on the turn they exit and combat strength. A unit receives one victory point per three combat points per turn that it has exited provided the road hex it exited from is still in supply at the end of the game.

The German receives 50 points per eliminated American stacking point and loses 50 points per eliminated German stacking point. Engineers and battalion sized units do not count.

At the end of the game the percent of combat strength left for each side will be determined. For every percentage point that the German has more than the American, he receives 20 points. For every percentage point less than the American, he loses 20 points.

At the end of the game the German will receive 3 points per controlled, supplied road hex north of St. Hubert and west of the Ourthe River.

10.2 End of Game and Victory Levels

When the game ends the program will continue to the next turn's Supply Phase to calculate victory points. At this time you will be allowed to access units on both sides to examine them.

The German score at the end of the game is compared to the chart below for the level of victory.

(1)	(2)	Level of Victory
1000	1600	American Strategic
1100	1700	American Tactical
1200	1800	Draw
1700	2300	German Tactical
1900	2700	German Strategic

The (1) column refers to the First Seven Day scenario and the (2) column refers to the Last Seven Day scenario and the Twelve Day scenario. The points listed are the minimum needed to attain that level of victory.

11.0 HISTORICAL COMMENTARY

In September 1944 the German army was on the verge of defeat. On the Western Front the Germans were outnumbered nearly 2-1 in divisions. The British/U.S. forces had reached the Westwall defenses on the German border. On the Eastern Front the Russians had driven to East Prussia and had conquered most of Rumania. In Italy the Germans had been slowly pushed back to the Po Valley in northern Italy. During June, July, and August the Germans had suffered tremendous losses in manpower and there were shortages in tanks, ammunition, and fuel.

Hitler then had an inspiration to launch a counterattack from the Ardennes with the objective being the large port of Antwerp which the British had captured intact. If Antwerp could be taken, it would cut off the entire British/Canadian Armies, the Ninth U.S. Army, and part of the First U.S. Army in Holland and Belgium.

During August and September the Western Allies had driven across France and Belgium to the German border. The Germans still held onto some of the major ports on the coast which forced the Allies to haul supplies from the Normandy beachhead. The Allied supply line was therefore extremely stretched and incapable of supplying all the forces at once. Hitler guessed that this would give him time to prepare his defenses along the Westwall and build up his strength in order to launch the counterattack. The autumn rain and mud would also help to slow down the Allied attacks.

Due to the powerful Allied airforce which controlled the skies, Hitler needed a few days of overcast weather to begin this attack and break through to reach Antwerp. The Ardennes sector was thinly held by both sides and was used as a resting place for worn out units which had taken heavy losses (4th and 28th Infantry Divisions) or a place to put newly arrived units in the line (106th Infantry Division). By concentrating the German forces on a narrow front, Hitler hoped to quickly pierce the front line and strike for the Meuse River crossings and then take Antwerp. The heavily wooded Ardennes area would provide excellent cover to conceal the buildup of forces near the front line.

Initially the Germans had 13 Infantry and 7 Panzer Divisions in the assault. Against them were 5 Infantry Divisions, 3 Cavalry Regiments, and 1 Armored Division.

During the early morning hours of December 16, 1944 the Germans unleashed their long awaited counteroffensive. A tremendous artillery barrage was fired disrupting Allied communications and causing panic in some of the green American units. The Germans quickly infiltrated through the scattered U.S. positions and soon had overrun or surrounded the 28th and 106th Infantry Divisions and the 14th Cavalry Division. Two regiments of the 106th Infantry were isolated, their retreat route blocked by advancing German units. They surrendered on December 19th.

By December 19, the 2nd, 99th, and 9th Infantry Divisions securely held the line extending northward from Elsenborn. Any further attacks would be repulsed with heavy losses. Piper/1SS had managed to get to Stoumont, but was now out of fuel and nearly surrounded by reinforcing American units. The 1st and 30th Infantry Divisions held the area from Elsenborn to Stoumont. The 7th Armored, 424/106, and 112/28 held ther Fortified Goose Egg which included the area around St. Vith stretching to Vielsam. The 82nd Airborne was deploying along the Salm River from Trois Ponts to Vielsam and westward to a point a few miles south of Manhay. The 101st Airborne Division had just barely arrived in Bastogne in time.

By the 19th the 116th Panzer Division had reached Houffalize and was looking for a bridge site over the Ourthe River. The 2nd Panzer Division was north of Bastogne and Panzer Lehr was just to the east of Bastogne. The 5th Fallschirmjager Division was about to enter Wiltz and the 352nd Infantry had taken Diekirch and was moving on Ettelbruck.

By December 23, Bastogne was surrounded by the German 26th VG Division and part of Panzer Lehr. The 2nd Panzer Division was close to Marche. The 116th Panzer was attacking the U.S. 3rd Armored in Hotton. The remnants of the American forces who had held the Fortified Goose Egg had just withdrawn across the Salm River by Vielsam. They had held up the German advance for a full week giving the Allies the precious time needed to form a defensive line further to the west. The 1st SS and 9th SS Panzer Divisions were attacking from Trois Ponts to Vielsam.

By December 27, the 2nd Panzer Division had been mauled by the U.S. 2nd Armored Division near Celles and had to retreat back to Rochefort. The 9th Panzer was attacking the 84th Infantry near Marche. The 9th SS Panzer had pushed the 82nd Airborne which was now holding a line from Trois Ponts to Manhay. The U.S. 4th Armored Division managed to open a narrow corridor into Bastogne and had linked up with the valiant defenders of the 101st Airborne. On the south flank the Germans held positions across the Sure River against attacks by the 80th, 26th, and 35th Infantry Divisions.

On January 2 the Allies would begin their counterattack to reduce the bulge created by the German offensive. By the end of January the front lines would be back to where they were on December 16.

The German breakthrough in the Ardennes failed for a number of reasons. The tenacious American defense at key road junctions delayed the German advance enough to allow American reinforcements to arrive on the battlefield and deploy. American reinforcements arrived much sooner than the Germans thought possible whereas German reserves were committed too late. The road net quickly became very congested, traffic being jammed far behind the forward advancing units. In addition poor weather conditions created extremely treacherous roads. American airpower proved devastating to any German vehicles moving along the roads during daylight hours in clear weather. The failure to capture key road centers also caused traffic to back up. Soon after the initial German assault was made, German stocks of fuel and artil-

lery ammunition were running low. All of these factors doomed the German breakthrough in the Ardennes and ended any hope of a quick German victory.

12.0 STRATEGY & TACTICS

After playing the game several times the designers and playtesters give the following suggestions:

German Player

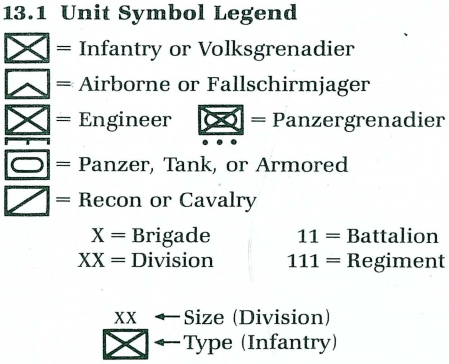
Plan ahead where you wish to make your major attacks. Earmark those areas to receive fresh reinforcing divisions and artillery assignments. When units arrive at the front build-up into divisions for maximum penetrating power. Make the most out of the first few turns when American reaction is slow. Taking the divisions at hand, drive up the Houffalize corridor and cross the Ourthe River as soon as possible. Once across the Ourthe strike toward Rochefort and the edge of the map. As you do this, surround and contain Bastogne, bringing up fresh divisions to wear down the defenses. Allocate two or three divisions to protect the southern flank from reinforcing American units. Remember that roads are key to supplying your units. Seize and maintain a good road net along your avenues of advance. Examine the victory conditions carefully and plan accordingly.

American Player

You must use your forces at hand carefully to maximize slowing down the German advance. Holding key road junctions or placing road junctions in your ZOC will most effectively slow the German advance. Take special care in placing the independent units that are allowed to enter the Houffalize corridor. The German potential for deep penetration and/or breakthrough is greatest in this area. Blow the bridges across the Ourthe River to slow the German advance. If units are being encircled by German forces either pull back or divisionalize to prevent from being isolated. Towns are potential strongpoints (and worth victory points), so think twice before you abandon one. When your reinforcements have arrived at the front and the German advance has been slowed, plan your counterattacks carefully, utilizing divisionalized units, fresh units, air strikes, and artillery. Attack where the German is vulnerable and where a supply route can be exposed. Retake towns and push the German east of the Ourthe River where possible.

13.0 CHARTS, TABLES, AND EXAMPLES OF PLAY

13.1 Unit Symbol Legend



13.2 Order of Battle Chart

11,111/XX/XXX	Type	Combat	Start-Date	Start-Loc.	Mob.
American					
422/106/XVII	INF	40	16th	19,28	N
423/106/XVII	INF	40	16th	18,28	N
424/106/XVII	INF	40	16th	16,25*	N
112/28/VIII	INF	45	16th	13,24*	N
–/28/VIII	INF	15	16th	2,26	N
–/28/VIII	INF	15	16th	2,24	N
–/28/VIII	INF	15	16th	4,25	N
–/28/VIII	INF	15	16th	7,22	N
–/28/VIII	INF	15	16th	9,22	N
–/28/VIII	INF	15	16th	9,20	N
–/IND	INF	30	16th	26,21	N
9/2/V	INF	50	16th	29,27	N
23/2/V	INF	50	16th	27,26	N
38/2/V	INF	50	16th	28,28	N
393/99/V	INF	40	16th	26,29	N
394/99/V	INF	40	16th	25,28	N
395/99/V	INF	40	16th	27,28	N
CCB/9/VIII	ARM	55	16th	21,24	Y
H/9/VIII	ARM	15	16th	7,15	Y
R/9/VIII	ARM	15	16th	8,17	Y
18/14/XVII	CAV	15	16th	22,30	Y
30/14/XVII	CAV	15	16th	19,18	Y
102/–/V	CAV	40	16th	30,27	Y
1102/–/VIII	ENG	10	16th	7,13*	N
1128/–/VIII	ENG	10	16th	6,19*	N
1111/–/VIII	ENG	10	16th	23,17*	N
1107/–/VIII	ENG	10	16th	19,23*	N
CCA/7/–/XVII	ARM	55	18th	30,13	Y
CCB/7/–/XVII	ARM	55	17th	30,15	Y
CCR/7/–/XVII	ARM	55	18th	30,13	Y
C/10/XII	ARM	15	17th	0,14	Y
D/10/XII	ARM	15	17th	0,14	Y
O/10/XII	ARM	15	17th	0,14	Y
16/1/V	INF	50	19th	30,22	N
18/1/V	INF	50	19th	30,22	N
26/1/V	INF	50	17th	30,22	N
TD-A/–/–	ARM	25	18th	30,9 *	Y
39/9/V	INF	45	18th	30,22	N
47/9/V	INF	45	18th	30,22	N
60/9/V	INF	45	22nd	30,16	N
117/30/XVII	INF	45	18th	30,12	N
119/30/XVII	INF	45	18th	30,13	N
120/30/XVII	INF	45	18th	30,16	N
TD-B/–/–	ARM	25	19th	30,12*	Y
327G/101/VIII	AB	40	19th	1,0	N
501/101/VIII	AB	40	19th	1,0	N
502/101/VIII	AB	40	19th	3,0	N
506/101/VIII	AB	40	19th	3,0	N
325G/82/XVII	AB	40	19th	19,0	N
504/82/XVII	AB	40	19th	19,0	N
505/82/XVII	AB	40	19th	22,0	N
508/82/XVII	AB	40	19th	22,0	N
CCA/3/VII	ARM	65	21st	30,12	Y
CCB/3/VII	ARM	60	19th	30,12	Y
CCR/3/VII	ARM	55	20th	30,12	Y
354/–/–	ENG	10	20th	9,0 *	N
1313/–/–	ENG	10	20th	19,0 *	N
333/84/VII	INF	45	21st	30,2	N
334/84/VII	INF	45	20th	30,6	N
335/84/VII	INF	45	21st	30,6	N
TD-C/–/–	ARM	25	21st	0,14*	Y
517/–/–	AB	40	22nd	30,9 *	N
317/80/XII	INF	45	22nd	0,23	N
318/80/XII	INF	45	22nd	0,23	N
319/80/XII	INF	45	22nd	0,23	N
101/26/III	INF	45	22nd	0,20	N
104/26/III	INF	45	22nd	0,20	N
328/26/III	INF	45	22nd	0,20	N
CCA/4/III	ARM	45	22nd	0,14	N
CCB/4/III	ARM	45	22nd	0,14	Y
CCR/4/III	ARM	45	22nd	0,14	Y
CCA/2/VII	ARM	65	22nd	30,2	Y
CCB/2/VII	ARM	65	22nd	30,6	Y
CCR/2/VII	ARM	65	22nd	30,9	Y
1308/–/–	ENG	10	22nd	19,0 *	N
289/75/VII	INF	40	23rd	30,2	N
290/75/VII	INF	40	23rd	30,6	N
291/75/VII	INF	40	23rd	30,9	N
TD-D/–/–	ARM	25	23rd	30,6	Y
329/83/VII	INF	45	25th	30,2	N
330/83/VII	INF	45	25th	30,6	N
331/83/VII	INF	45	25th	30,6	N
134/35/III	INF	45	25th	0,20	N
137/35/III	INF	45	25th	0,20	N
324/35/III	INF	45	25th	0,14	N

11,111/XX/XXX	Type	Combat	Start-Date	Start-Loc.	Mob.
German					
2/2/XLVII	PZGR	45	16th	9,23	Y
3/2/XLVII	PZ	55	16th	9,24	Y
304/2/XLVII	PZGR	45	16th	9,23	Y
1/1SS/ISS	PZGR	65	16th	23,31	Y
2/1SS/ISS	PZGR	65	16th	23,31	Y
PIPER/1SS/ISS	PZ	85	16th	23,31	Y
39/26/XLVII	VG	55	16th	8,24	N
77/26/XLVII	VG	55	16th	8,24	N
78/26/XLVII	VG	45	16th	7,24	N
16/116/LVIII	PZ	55	16th	13,26	Y
60/116/LVIII	PZGR	45	16th	13,25	Y
156/116/LVIII	PZGR	60	16th	13,25	Y
5/3/ISS	FJ	32	16th	23,30	N
8/3/ISS	FJ	32	16th	24,31	N
9/3/ISS	FJ	45	16th	23,30	N
12/12SS/ISS	PZ	60	16th	28,31	Y
25/12SS/ISS	PZGR	60	16th	27,30	Y
26/12SS/ISS	PZGR	60	16th	28,31	Y
190/LEHR/XLVII	PZ	32	16th	8,27	Y
901/LEHR/XLVII	PZGR	32	16th	7,26	Y
902/LEHR/XLVII	PZGR	32	16th	8,26	Y
REC/LEHR/XLVII	CAV	40	16th	7,25	Y
969/277/ISS	VG	25	16th	27,29	N
990/277/ISS	VG	25	16th	26,30	N
991/277/ISS	VG	15	16th	26,30	N
914/352/LXXXV	VG	25	16th	3,26	N
915/352/ISS	VG	25	16th	3,26	N
916/352/ISS	VG	25	16th	3,26	N
164/62/LXVI	VG	25	16th	16,26	N
183/62/LXVI	VG	25	16th	15,25	N
190/62/LXVI	VG	25	16th	16,26	N
27/12/ISS	VG	25	16th	25,29	N
48/12/ISS	VG	25	16th	25,29	N
89/12/ISS	VG	25	16th	25,30	N
1128/560/LVIII	VG	32	16th	12,25	N
1129/560/LVIII	VG	15	16th	12,25	N
1130/560/LVIII	VG	25	16th	12,25	N
293/18/LXVI	VG	25	16th	17,27	N
294/18/LXVI	VG	25	16th	22,31	N
295/18/LXVI	VG	25	16th	21,30	N
13/5/LXXXV	FJ	32	16th	5,25	N
14/5/LXXXV	FJ	32	16th	5,25	N
15/5/LXXXV	PZGR	40	16th	5,25	Y
150-SK-SS/–/–	PZ	40	16th	27,30	Y
PZ/–/XLVII	PZ	25	16th	9,25	Y
PZ/–/LVIII	PZ	25	16th	10,27	Y
560/–/–	PZ	25	16th	22,31	Y
11/–/LXXXV	PZ	25	16th	4,27	Y
PZ/–/LXVI	PZ	25	16th	19,29	Y
ENG/–/ISS	ENG	10	16th	27,30	Y
ENG/–/IISS	ENG	10	16th	24,31	Y
ENG/–/XLVII	ENG	10	16th	9,23	Y
ENG/–/LXXXV	ENG	10	16th	7,24	Y
ENG/–/LVIII	ENG	10	16th	2,31	Y
ENG/–/LXVI	ENG	10	16th	5,27	Y
–/272/LXVII	VG	25	16th	30,28	N
751/326/LXVII	VG	25	16th	29,28	N
752/326/LXVII	VG	25	16th	29,28	N
753/326/LXVII	VG	20	16th	28,29	N
JPZ/–/LXXX	PZ	40	17th	23,31	Y
FB/–/–	PZ	99	19th	23,31	Y
519/–/–	PZ	25	19th	19,31	Y
9/9SS/IISS	PZ	60	19th	19,31	Y
19/9SS/IISS	PZGR	60	19th	19,31	Y
20/9SS/IISS	PZGR	55	19th	16,31	Y
2/2SS/IISS	PZ	65	19th	16,31	Y
3/2SS/IISS	PZGR	65	19th	16,31	Y
4/2SS/IISS	PZGR	60	19th	14,31	Y
8/3/ISS	PZGR	60	19th	14,31	Y
9/3/ISS	PZGR	60	19th	14,31	Y
FGR/–/–	PZGR	60	22nd	19,31	Y
208/79/LXXXV	VG	25	23rd	23,31	N
212/79/LXXXV	VG	25	23rd	23,31	N
226/79/LXXXV	VG	25	23rd	23,31	N
10/9/XLVII	PZGR	45	23rd	19,31	Y
11/9/XLVII	PZGR	40	23rd	19,31	Y
33/9/XLVII	PZ	45	23rd	19,31	Y
104/15/XLVII	PZGR	60	23rd	16,31	Y
115/15/XLVII	PZGR	60	23rd	16,31	Y

Note: All American engineer units have a combat value of 5 and TD units have a combat value of 15 in two-player games instead of the values listed above.

* = those American units allowed to enter the corridor (see 7.6).

13.3 Unit Statistics and Conditions Example

When a unit is accessed during the Unit Organization Phase or when a unit is displayed within the command menu of the Operations Phase the following statistics and conditions of the unit are displayed:

```
GER 116 PZ DIV  ADVANCE-N
COMBAT: 105 ARTILLERY: 30
OPERATION: 20 FORT: 2 EFF: 100%
STACK: 2 NORMAL  SUPPLIED
LVIII CORPS ARTILLERY: 40
```

In the example above the German 116th Panzer Division:

- will not advance after combat
- has 105 combat strength points
- has 30 artillery points
- has 20 remaining operation points
- has a fortification level of two
- has an efficiency of 100%
- has a stacking value of two
- is in normal mode
- is in a supplied state
- belongs to the LVIII Corps which has 40 remaining artillery points to distribute (this line will only appear in the Organization Phase if the unit belongs to a Corps Artillery Pool).

13.4 Artillery Corps Table

Corps	Composite Div.	Art. Pts.	Rein. Pts/ Date
American			
V Corps	1,2,9,99	115	30/Dec.18
VII Corps	83,84,75,2A,3A	0	60/Dec.18
XVII Corps	14C,82,30,106,7A	0	90/Dec.18
III Corps	26,35,4A	0	60/Dec.21
VIII Corps	28,101,9A	40	45/Dec.19
XII Corps	80	0	30/Dec.22
German			
LXVII Corps	272,326	65	
ISS Corps	12,277,3FJ,1SS, 2SS,12SS,3PZGR	130	
IISS Corps	2SS,9SS	0	15/Dec.19
LXVI Corps	18,62	25	
XLVII Corps	26,2PZ,Lehr, 9PZ,15PZGR	75	
LVIII Corps	560,116PZ	65	
LXXXV Corps	79,352,5FJ	55	

13.5 Operation Cost Table

Terrain/Action	Mobile Units	Non-Mobile Units
Clear (Freeze)[1]	3(3)	3(3)
Rough (Freeze)	6(4)	3(3)
Town (Freeze)	4(4)	3(3)
Forest (Freeze)	8(6)	3(3)
Road (Town)[2]	1(2)	1(2)
Bridge[3]	+2	+2
River (Engineers)[4]	N/A(3)[7]	5(3)
Enter Enemy Hex	1	1
Enter Enemy ZOC[5]	2	2
Leave Enemy ZOC (T.Mode)	4(6)	4(6)
Change Mode (American)[6]	7(10)	3(6)
Construct Bridge	ALL	ALL
Destroy Bridge	15	5
Defend in Combat	3	3
Attack in Combat[8]	6	6
Fortify (Eng.)	10(5)	6(3)
Fortify in ZOC (Eng.)	20(10)	12(6)

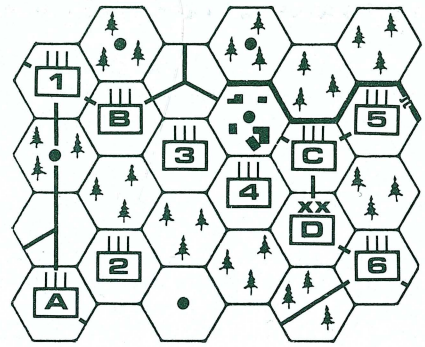
NOTES

(1) The ground freeze starts DEC. 24.
(2) Units must be in travel mode.
(3) +2 per German unit that crosses the bridge that turn. No additional cost for American units.
(4) Engineer rate applies if engineer is at either side of river crossing.
(5) If a unit in normal mode has just exited an enemy ZOC its operation points are reduced to zero.
(6) American non-mobile units incur double (twelve) the cost to leave travel mode.
(7) Exception: Panzergrenadiers may cross rivers at a cost of 4 points with an engineer and 8 points without.
(8) Units that attack in the second operation phase have their operation points reduced to zero.

13.6 Combat Modifiers

Terrain/ Condition	Def. Modifier	Att. Modifier
Clear	1.0	1.0
Rough	1.3	1.0
Town	2.0	1.0
Forest	1.7	1.0
River	1.0	.75
Travel Mode	.60	.60
Fortification	1 + (.3 × Level)	N/A
Divisional	1.25	1.25
Efficiency	EFF# × .01	EFF# × .01
Unsupplied	.75	.50
Isolated	.50	N/A

13.7 Supply Examples



● = German Hex

Units numbered 1-6 are American and units lettered A-D are German. American units 1, 3, 4, 5, and 6 are supplied. Unit 2 is unsupplied because it cannot trace supply within two hexes of a friendly supplied road hex. German A is supplied. Unit B is isolated and units C and D are unsupplied. Unit B is isolated because it is unable to trace supply and is surrounded by enemy ZOC (of enemy units next to it). Unit C is unsupplied due to a blocked supply trace. It would be isolated if it wasn't next to a divisional unit since it is surrounded by enemy ZOC. Unit D has a blocked supply trace and would be isolated if it wasn't a divisional unit.

14.0 DEDICATION

We would like to give our appreciation to Joel Billings, whose assistance and support helped make this game.

SSI
STRATEGIC SIMULATIONS INC.

Credits

Game Design
Chuck Kroegel

Programming
David Landrey

Development
David Landrey and **Chuck Kroegel**

Customized Disk Operating System
Roland Gustafsson

Art & Graphic Design
Louis Hsu Saekow, Kathryn Lee &
James C. Sommerville

Typesetting
Abra Type

Printing
A&a Printers and Lithographers

APPLE version: Produced using copyrighted software products of Einstein Corporation.

ATARI version: Produced using copyrighted software products of Monarch Data Systems.

C-64 version: Parts of this product are copyrighted by Drive Technology Ltd. 1983.

OPERATION COST TABLE

Terrain/Action	Mobile Units	Non-Mobile Units
Clear (Freeze)[1]	3(3)	3(3)
Rough (Freeze)	6(4)	3(3)
Town (Freeze)	4(4)	3(3)
Forest (Freeze)	8(6)	3(3)
Road (Town)[2]	1(2)	1(2)
Bridge[3]	+2	+2
River (Engineers)[4]	N/A(3)[7]	5(3)
Enter Enemy Hex	1	1
Enter Enemy ZOC[5]	2	2
Leave Enemy ZOC (T.Mode)	4(6)	4(6)
Change Mode (American)[6]	7(10)	3(6)
Construct Bridge	ALL	ALL
Destroy Bridge	15	5
Defend in Combat	3	3
Attack in Combat[8]	6	6
Fortify (Eng.)	10(5)	6(3)
Fortify in ZOC (Eng.)	20(10)	12(6)

NOTES

(1) The ground freeze starts DEC. 24.
(2) Units must be in travel mode.
(3) +2 per German unit that crosses the bridge that turn. No additional cost for American units.
(4) Engineer rate applies if engineer is at either side of river crossing.
(5) If a unit in normal mode has just exited an enemy ZOC its operation points are reduced to zero.
(6) American non-mobile units incur double (twelve) the cost to leave travel mode.
(7) Exception: Panzergrenadiers may cross rivers at a cost of 4 points with an engineer and 8 points without.
(8) Units that attack in the second operation phase have their operation points reduced to zero.

WEATHER

December 16th and 17th — 100% Overcast

December 18th through 21st — 50% Overcast and 50% Fog

December 22nd through 24th — 16% Overcast, 34% Fog, and 50% Clear

December 25th through 27th — 34% Fog and 66% Clear

ARTILLERY CORPS TABLE

Corps	Composite Div.	Art. Pts.	Rein. Pts/ Date
American			
V Corps	1,2,9,99	115	30/Dec.18
VII Corps	83,84,75,2A,3A	0	60/Dec.18
XVII Corps	14C,82,30,106,7A	0	90/Dec.18
III Corps	26,35,4A	0	60/Dec.21
VIII Corps	28,101,9A	40	45/Dec.19
XII Corps	80	0	30/Dec.22
German			
LXVII Corps	272,326	65	
ISS Corps	12,277,3FJ,1SS, 2SS,12SS,3PZGR	130	
IISS Corps	2SS,9SS	0	15/Dec.19
LXVI Corps	18,62	25	
XLVII Corps	26,2PZ,Lehr, 9PZ,15PZGR	75	
LVIII Corps	560,116PZ	65	
LXXXV Corps	79,352,5FJ	55	

COMBAT MODIFIERS

Terrain/ Condition	Def. Modifier	Att. Modifier
Clear	1.0	1.0
Rough	1.3	1.0
Town	2.0	1.0
Forest	1.7	1.0
River	1.0	.75
Travel Mode	.60	.60
Fortification	1 + (.3 × Level)	N/A
Divisional	1.25	1.25
Efficiency	EFF# × .01	EFF# × .01
Unsupplied	.75	.50
Isolated	.50	N/A

If you have any questions or problems regarding the program or game, please send a self-addressed, stamped envelope with your question to: *STRATEGIC SIMULATIONS INC, 883 Stierlin Road, Bldg. A-200, Mountain View, CA 94043-1983.*
Or call our Hotline Number: **(415) 964-1200** every weekday, 9 to 5 (P.S.T.).